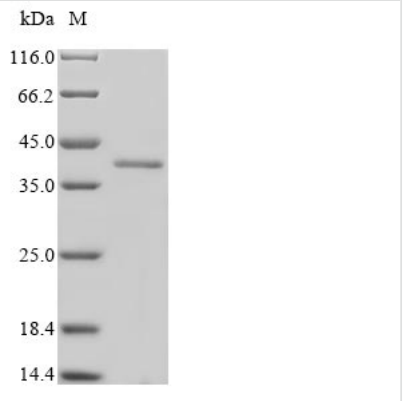
Recombinant Mouse Survival motor neuron protein (Smn1)

Product Code	CSB-MP021838MO
Relevance	The SMN complex plays a catalyst role in the assembly of small nuclear ribonucleoproteins (snRNPs), the building blocks of the spliceosome. Thereby, plays an important role in the splicing of cellular pre-mRNAs. Most spliceosomal snRNPs contain a common set of Sm proteins SNRPB, SNRPD1, SNRPD2, SNRPD3, SNRPE, SNRPF and SNRPG that assemble in a heptameric protein ring on the Sm site of the small nuclear RNA to form the core snRNP. In the cytosol, the Sm proteins SNRPD1, SNRPD2, SNRPE, SNRPF and SNRPG are trapped in an inactive 6S pICln-Sm complex by the chaperone CLNS1A that controls the assembly of the core snRNP. Dissociation by the SMN complex of CLNS1A from the trapped Sm proteins and their transfer to an SMN-Sm complex triggers the assembly of core snRNPs and their transport to the nucleus. Ensures the correct splicing of U12 intron-containing genes that may be important for normal motor and proprioceptive neurons development. Also required for resolving RNA-DNA hybrids created by RNA polymerase II, that form R-loop in transcription terminal regions, an important step in proper transcription termination. May also play a role in the metabolism of small nucleolar ribonucleoprotein
Abbreviation	Recombinant Mouse Smn1 protein
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P97801
Product Type	Recombinant Protein
Immunogen Species	Mus musculus (Mouse)
Purity	Greater than 85% as determined by SDS-PAGE.
Sequence	MAMGSGGAGSEQEDTVLFRRGTGQSDDSDIWDDTALIKAYDKAVASFKHALK NGDICETPDKPKGTARRKPAKKNKSQKKNATTPLKQWKVGDKCSAVWSEDG CIYPATITSIDFKRETCVVVYTGYGNREEQNLSDLLSPTCEVANSTEQNTQENE SQVSTDDSEHSSRSLRSKAHSKSKAAPWTSFLPPPPPMPGSGLGPGKPGLKF NGPPPPPPLPPPPFLPCWMPPFPSGPPIIPPPPPISPDCLDDTDALGSMLISWY MSGYHTGYYMGFRQNKKEGKCSHTN
Research Area	Neuroscience
Source	Mammalian cell
Target Names	Smn1
Protein Names	Smn
Expression Region	1-288aa

Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 10xHis-tagged and C-terminal Myc-tagged
Mol. Weight	35.3kDa
Protein Length	Full Length

Image



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

Description

Recombinant Mouse Survival motor neuron protein (Smn1) is produced using a mammalian cell expression system, which appears to ensure proper eukaryotic post-translational modifications and functionality. This full-length protein spans amino acids 1-288 and includes an N-terminal 10xHis tag plus a C-terminal Myc tag for purification and detection purposes. SDS-PAGE analysis indicates the protein reaches purity levels exceeding 85%, which should make it suitable for various research applications.

The survival motor neuron protein (Smn1) seems to play a critical role in assembling small nuclear ribonucleoproteins (snRNPs) - key components of the spliceosome complex. It participates in pre-mRNA splicing, a fundamental process in gene expression. Smn1's function is likely vital for cellular RNA processing and has become a focal point for understanding molecular mechanisms of RNA metabolism and related cellular pathways.

Potential Applications

Note: The applications listed below are based on what we know about this protein's biological functions, published research, and experience from experts in the field. However, we haven't fully tested all of these applications ourselves yet. We'd recommend running some preliminary tests first to make sure they work for your specific research goals.

1. Protein-Protein Interaction Studies Using Pull-Down Assays

The dual tagging system - that N-terminal 10xHis tag paired with the C-terminal Myc tag - allows for efficient purification and detection of Smn1 protein complexes. Researchers can immobilize this dual-tagged recombinant Smn1 on nickel-affinity resins to capture interacting proteins from mouse tissue lysates or cell extracts. The Myc tag then provides a way to specifically detect and confirm

Smn1 presence in pulled-down complexes using anti-Myc antibodies. This approach may prove particularly valuable for identifying novel binding partners of the survival motor neuron protein in motor neuron biology research.

2. Antibody Development and Validation

This full-length recombinant mouse Smn1 protein could serve as an ideal antigen for generating specific antibodies against the survival motor neuron protein. The mammalian expression system likely ensures proper protein folding and post-translational modifications that closely resemble the native protein. Researchers might use this protein to immunize animals for polyclonal antibody production or as a screening antigen for monoclonal antibody development. Those dual tags also offer a way to validate antibody specificity through tag-based detection controls.

3. Biochemical Characterization and Stability Studies

This purified recombinant Smn1 protein enables detailed biochemical analysis - think protein stability assessments, folding property studies, and buffer optimization experiments. Thermal stability assays, pH tolerance tests, and storage condition optimization all become possible with this full-length protein. The 85% purity level appears sufficient for most biochemical characterization experiments, allowing researchers to investigate how the protein behaves under various experimental conditions relevant to motor neuron research.

4. ELISA-Based Quantitative Assays

The dual-tagged Smn1 protein may serve as a standard or control in enzyme-linked immunosorbent assays for quantifying Smn1 levels in biological samples. Both Myc and His tags provide multiple detection options, which could enable sandwich ELISA formats or direct detection methods. This application might prove particularly useful for researchers studying Smn1 expression levels across different mouse tissues, developmental stages, or disease models where quantitative measurement of the survival motor neuron protein is required.

Reconstitution	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.
Shelf Life	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.